

# Probability of Freezing Temperatures

## Product Description Document

### Part I - Mission Connection

- a. Product Description - The Probability of Freezing Temperatures product will be a graphical display on the internet of the probability (in percent) that overnight low temperatures will fall to freezing or below across the (PDT) County Warning Area (CWA) for the “tonight” and “tomorrow night” time periods. It will be updated as necessary, but at a minimum with each major Zone Forecast issuance at 3 pm and 4 am local Pacific time. The product will be issued seasonally in the fall from September 15<sup>th</sup> until November 30<sup>th</sup> and in the Spring from March 15<sup>th</sup> until May 31<sup>st</sup>.
- b. Product Type - Operational
- c. Purpose - The purpose of this product is to provide our customers and partners with enhanced detail on the potential for freezing temperatures. The probabilities represent a measure of the forecasters confidence that freezing temperatures will occur in a given area.
- d. Audience - The audience is any customer in the WFO forecast area who would like access to graphically-depicted probabilistic forecasts for freezing temperatures.
- e. Presentation Format - All displays occur via a web page interface. Forecasters create the graphics in GFE and then run a script to transfer PNG files to the PDT home page. A graphic exists for the “tonight” and “tomorrow night” probability forecasts, with a minimum temperature forecast graphic included for reference for each time period.
- f. Feedback Method - We will solicit feedback through an existing NWS Feedback form and/or e-mail to the WFO webmaster:  
  
Point of Contact: Mike Vescio MIC WFO Pendleton, OR 2001 NW 56th Drive  
Pendleton, OR 97801 [Michael.Vescio@noaa.gov](mailto:Michael.Vescio@noaa.gov)
- g. Example URL = <http://www.wrh.noaa.gov/pendleton/freeze>
- h. Product URL = <http://www.wrh.noaa.gov/pdt/currentHazards/graphicalHazards.php?tab=2>
- i. PDD Approved by Vickie Nadolski, WRH Regional Director

## Part II - Technical Description

- a. Format and Science Basis - This product was developed to provide customers enhanced information on the potential for freezing temperatures. Forecasters create the graphics in GFE using a smart tool. As input to the tool, the forecaster chooses a forecast temperature below which there is a 100% chance that the actual low temperature will be 32F or lower and a forecast temperature above which there is a 0% chance that the actual low temperature will be 32F or lower. The smart tool then fits a curve to the minimum temperature grid to interpolate the probabilities between the two endpoints. For example, on a day with average forecast confidence a forecaster might choose a forecast low of 28F to be his/her 100% threshold and 36F to be the 0% threshold. The smart tool would then assign probabilities to intermediate temperatures based on the curve chosen. On a day with lesser forecast confidence the temperature spread between 100% and 0% would increase. Forecasters will have the option to post-edit the grids especially when temperature endpoint thresholds are non-homogenous across the forecast domain.
- b. Availability - The graphics will be available 24/7. The graphics will be updated at a minimum of twice per day with the issuance of each major Zone Forecast Product (ZFP). However, they may also be updated at non-routine times as conditions warrant.
- c. Additional Information - Forecast output from this application is not intended to be a substitute for official NWS Frost and Freeze Warning products, nor is intended for a specific user group. Its intent is to provide enhanced information of freezing temperatures to all of our customers and to introduce our users to probabilistic forecasting of non-precipitation variables.